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AUTHOR Ruth, Lester R., Jr.
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ABSTRACT

The major purpose of the project described in this report was to develop a taxonomy of educational benefits that would include definitions of terms, categories of the classification structure, examples of various categories of benefits, and examples of measures of benefits. The report first discusses four principles of classification: the exhaustivity of divisions, the mutual exclusion of subdivisions, the utilization of one fundamental principle at each stage of division, and the identification of clear-cut differentiations among the classification segments. A table is then presented which, based on these criteria, evaluates 13 educational and non-educational classification systems in order to identify desirable features of taxonomic design. The structure of a taxonomy of educational benefits is then presented, based on the benefits accrued by private consumers (e.g., students and graduates), public consumers (e.g., the general public, communities, and local governments), and producers (i.e., the educational institution itself). Within each of these beneficiary categories, the benefits are classified as direct or indirect and long- or short-range. Finally, the report evaluates the proposed taxonomy. The report is appended by a chart of the proposed taxonomy, illustrating examples of benefits and suggested ways of measuring them. (JP)

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A PROPOSED TAXONOMY OF EDUCATIONAL BENEFITS

Preliminary Version

Lester R. Ruth, Jr., Ed.D.
Lake Sumter Community College

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A PROPOSED TAXONOMY OF EDUCATIONAL BENEFITS

Preliminary Version

Introduction

The major purpose of this project was to develop a taxonomy, or classification structure, of educational benefits. The taxonomy was to include definitions of terms, categories of the classification structure, examples of various categories of benefits, and examples of means used to measure benefits.

One of the basic components of any organized body of knowledge, or discipline, is a structure for classifying and identifying the elements of the subject of the discipline. Such a structure is closely related to definitions of the terms used in the discipline and thus is an important factor in accurate communications. It also helps in identifying various elements of the subject and in locating elements that have already been classified. By clarifying relationships among the elements, a taxonomy serves as an aid to inference and research (1).

A taxonomy is more than just a classification system. The prototype taxonomy is that of the biological sciences used in classifying all living things. The American Heritage Dictionary defines taxonomy as "the science, laws, or principles of classification." Dressel, in a critique of the Taxonomy of Educational Objectives, says that a taxonomy should be composed of mutually exclusive, clearly differentiated categories; should be comprehensive enough "...to provide bases for all possible decisions;" should use categorical labels consistent with existing usage; and should have a structure that defines relationships among the categories. Cohen and Nagel distinguish between two kinds of

classification systems, the natural and the artificial. The latter is based on arbitrarily selected characteristics; the former on inherent characteristics shared by members of the same class. Those traits should be selected which prove most fruitful as principles for attaining systematic knowledge. The basic process for developing a classification system is division. They cite three rules of classification:

1. A division must be exhaustive.
2. The constituent species of the genus must exclude one another.
3. A division must proceed at every stage upon one principle, the fundamentum divisionis.

They add, however, that these rules express an ideal and that they are inadequate for a well-developed science. For one thing, we can never be sure that subaltern genera (sub-categories, or constituent species) are mutually exclusive or, for another, that the division is exhaustive (2). As a science develops two changes appear to occur. First, the basic process becomes one of aggregation rather than division. Second the fundamentum divisionis may change, often resulting in a restructuring of the classification system. The third rule may be violated in another way: more than one principle may serve as a basis for classification (3).

For the purposes of this project, taxonomy was defined as a method of classification and a classification structure, the primary purpose of which is to provide fruitful principles for attaining systematic knowledge through the appropriate selection of characteristics on which the classification is based.

Closely related to classification is definition, the process of assigning terms to the categories of a taxonomy or vice versa. One of the differences between "natural" and artificial systems is the rela-

tionship the former have to definitions per genus et differentia. Such definitions have three parts: the term being defined, the class to which the term belongs (genus) and the characteristics that distinguish it from the other members of the same genus (differentiae). The differentiae are to definitions what the fundamenta divisionis are to taxonomies.

A number of classification structures related to education have been developed. Fiscal accounting is essential to any enterprise that consumes resources. Financial systems for education involve highly developed structures for classifying income, expenditures, and costs (4). Perhaps best known of all educational taxonomies is the Taxonomy of Educational Objectives produced by Bloom, Krathwohl and others (5). NCHEMS has produced a Program Classification Structure and an Inventory of Outcome Variables and Measures (6). All of these are purposely limited in scope: charts of accounts to financial matters, the Bloom taxonomy to the outcomes of instruction, and the NCHEMS structures primarily to an institutional viewpoint. Even within institutions there exists a plurality of educational philosophies which, compounded with the many points of view of other publics concerned with education, has resulted in a plurality of definitions (or lack of clear definition) of educational benefits. What may be conceived as an educational benefit from one point of view may be seen as a cost or liability from another (7). A taxonomy of educational benefits needs to be broad in scope; it needs to include all points of view.

Methodology

The methodology consisted of three major steps. First, a survey was conducted of selected existing classification structures for the purpose of developing taxonomic principles and design criteria. Second the results of the survey were used to construct a preliminary classification

structure. Third the classification structure was evaluated against the design criteria and the results used to make or suggest modifications in the structure.

Results

The classification structures surveyed and the evaluations are summarized in Table 1. Each structure was evaluated against the following criteria: (1) the use of a single classification principle on each level; (2) mutually exclusive genera; (3) comprehensive subject matter; (4) the definition of interrelationships among genera. The purposes of the classifications were also included in the analysis, as were the major classification principles. They are summarized in Table 2.

Classification systems were selected for variety--some non-educational ones were included--and for their usage. Some of the criteria presented difficulties. Classification principles were not always clear. At times a single characteristic or measure was used for several categories; however, this did not necessarily indicate a lack of mutual exclusion unless it was the characteristic or measure itself that was being classified. It is often difficult to judge whether the subject of the taxonomy is covered comprehensively. Nevertheless, the survey was useful in setting up design criteria and in developing the categories of a taxonomy of educational benefits.

The following design criteria were selected:

I. Purposes of the Taxonomy
   1. Clarify Meanings of terms associated with educational benefits
   2. Facilitate communication among groups interested in educational benefits
   3. Promote and facilitate research about educational benefits

II. The Taxonomy
   1. Categories based on definitions

Table 1 Survey of Selected Classification Structures: Evaluations

Name of Classification Structure Source	Single Principle for each Level?	Mutually Exclusive Genera?	Comprehensive Subject Matter?	Generic Interrelationships Defined?
Biological Taxonomy: Life Lanham, "Mapping the Living World," Origins of Modern Biology (1968), ch. 7	no	yes	yes	yes
Chart of Accounts (NACUBO) Planning, Budgeting and Accounting: A College Operating Manual, Section II (1970), pp. II-84 - II-101.	no	no	yes	yes
Cost Accounting: Costs Horngren, Cost Accounting: A Managerial Emphasis (1977), pp. 4, 24-25, 28, 34, 497.	yes	no	yes	yes
Costs and Benefits of Higher Education Mosher, "The Development of a Cost-Benefit Model for Higher Education" (1972), pp. 75-82.	?	no	no	yes
Goals of Education (Florida) Education Policy for the State of Florida (1975), p. 3.	no	no	?	?
Higher Education Measures Higher Education Measurement and Evaluation Kit (1972).	no	no	?	yes
Library of Congress Classification Immroth, A Guide to the Library of Congress Classification (1971).	yes	yes	yes	no
Program Classification Structure (NCHEMS) Gulko, Program Classification Structure (1972).	yes	yes?	yes	yes
Program Measures (NCHEMS) Topping and Miyataki, Program Measures (1973)	?	?	yes	yes

Table 1 Survey of Selected Classification Structures: Evaluations (Continued)

Name of Classification Structure Source	Single Principle for each Level?	Mutually Exclusive Genera?	Comprehensive Subject Matter?	Generic Interrelationships Defined?
Social Benefits of Higher Education Dressel, Handbook of Academic Evaluation (1976), pp. 76-77.	yes	yes	?	?
Socioeconomic Impact of Two-Year Colleges Alfred, Socioeconomic Impact of Two-Year Colleges (1980).	no	no	yes	yes
Student Goals Student Goals Catalog and Handbook for Utilization (1976).	yes	no	?	yes?
Taxonomy of Educational Objectives Bloom, Krathwhol, and others, Taxonomy of Educational Objectives (1956, 1964).	yes	no	yes	yes
TOTAL NUMBER OF YESSES	6	4	8	10

Table 2 Survey of Selected Classification Structures Subject Matter and Principles

Classification Structure	Purpose, Subject of Structure	Major Principles of Classification
Biological Taxonomy	Identification of living things	Plants/Animals Structures related to function, adaptation
NACUBO Accounts	Provide financial control and information	Purpose of funds Sources of funds Type of financial behavior
Cost Accounting	Costs	Method of allocation Cost objective
Costs, Benefits of Higher Education	Costs and Benefits of higher education	Costs/Benefits
Goals of Education	Goals of Education of Florida	Subject matter Purpose
Higher Education Measures	Evaluate effectiveness of programs and institutions	Input/Output/Process
Library of Congress	File and locate printed materials	Kind of material Subject of material
NCHEMS Program Classification Structure	Common functional operations of institutions of higher education	Program objectives
NCHEMS Program Measures	Program measures	Program Kind of outcome
Social Benefits of Higher Education	Social Benefits	Private/Social Production/consumption
Socioeconomic Impact of Two-Year Colleges	Socioeconomic impact measurement	Social/economic Individual/community
Student Goals	Student goals	Type of development
Taxonomy of Educational Objectives	Educational objectives	Types of behavior Complexity of behavior

2. Consistent classification principles on each level
3. Generic interrelationships defined
4. Consistency with present educational classification structures
5. Comprehensive coverage of educational benefits
6. Simplicity

III. Definitions
1. Consistent with taxonomy
2. Based on current usage
3. Per genus et differentia
4. Based on innate characteristics (properties) of terms being defined.

The first term defined was educational benefits, as "'Anything that promotes or enhances well-being' (8) of a group or individual and that is produced by an educational delivery system." Thus the term implies a recipient, a beneficiary, and well-being to be enhanced: physical, financial, psychological, personal, political, cultural, and social. Promotion or enhancement may be defined in terms of meeting needs or satisfying desires. Products, needs, and desires may all be expressed in terms of goals and objectives. Thus a more productive definition, in terms of the taxonomy, is "a product of an educational system: (1) the achievement of a goal or objective, (2) progress toward the achievement of a goal or objective, or (3) assistance in the achievement of a goal or objective, including the goals and objectives of individuals, groups and educational delivery systems."

This definition and characteristics implied by it provide the basis for the taxonomy. Characteristics were selected for each level of the structure to provide a logical or productive ordering of genera. The major categories were based on kinds of beneficiaries, since what may benefit one individual or group may not benefit--may actually cost--another (9). The major divisions are: (1) consumers: private, (2) con-

sumers: public, and (3) producers (educational delivery systems). The second division was by subgroups of beneficiaries, usually ordered from smallest to largest. The third was as direct or indirect. A direct benefit is achievement or progress toward achievement of a goal or objective. An indirect benefit is assistance toward the achievement of a goal or objective. The acquisition of a marketable skill may be direct or indirect, depending on whether the student's goal is to acquire the skill or obtain a job. The fourth level categorizes benefits as long- or short-range, following a similar classification of goals and objectives. the fifth level is variable, depending on goals, objectives, or programs of various subgroups of beneficiaries.

An analysis of existing educational program and goal structures and of evaluation measures and methods was used to complete the fifth level and to partially validate the taxonomy by providing examples of benefits, which were implied by the programs or goals and by the measures. As a result, the fifth level was moved up to third, changing the ordering of categories as follows: (1) beneficiary, (2) beneficiary sub-groups, (3) variable, (4) direct/indirect, and (5) long-range/short-range. The revised taxonomy with examples of benefits and measures of benefits is found in appendix A.

Evaluation and Conclusions

The taxonomy was evaluated against the design criteria. The results are summarized in Table 3. By defining the term educational benefits and the categories of educational benefits, the taxonomy should help to clarify meanings and thus facilitate communication. This, however depends on the extent to which the taxonomy is actually used. The clarification of meanings should also help to facilitate research. The taxonomy suggests

areas in which research might be fruitful: identification of benefits, measurement of benefits, identification of benefits common to more than one category (overlapping categories), and perhaps a restructuring of the Taxonomy.

Table 3 Evaluation of the Taxonomy

Purposes		Taxonomy (Continued)	
1. Clarify meanings?	Yes	4. Consistent with existing educational structures?	Yes
2. Facilitate Communication?	Yes?	5. Comprehensive	Yes?
3. Promote, facilitate research?	Yes	6. Simple	?
Taxonomy		Definitions	
1. Based on definitions?	Yes	1. Consistent with Taxonomy?	Yes
2. Consistent classification principles?	Yes?	2. Based on common usage?	Yes
3. Generic Interrelationships defined?	Yes	3. Per genus et differentia?	Yes
		4. Based on innate characteristics?	Yes

The method of development insured compliance with most of the other criteria. For example, using existing structures in the development and partial validation of the taxonomy helped to assure consistency with those structures, comprehensive coverage of the subject, and definitions based on commom usage. The use of definitions per genus et differentia helped in the definition of generic interrelationships.

This taxonomy in its present form is only a beginning. It needs improvement. The organization of the structure needs to be reviewed, alternatives examined, and fruitful revisions made. One alternative may be found in appendix B. The subcategories and the principles on which they are based need to be evaluated and revised as necessary. The taxonomy needs to be completed by the addition of missing categories and by the identification and classification of additional benefits.

Nevertheless, the taxonomy in its present form can be useful. By clarifying the meaning of educational benefits and related terms, it should help improve communications among various publics concerned with education. It should provide useful concepts and stimuli for institutional and other research projects. In addition to those research projects related to its validation and completion, mentioned above, the taxonomy should assist in better evaluation of educational programs by suggesting areas heretofore neglected, should suggest additional areas of institutional research, should stimulate the search for adequate means and measures for assessing the impact of educational programs, and should provide a conceptual framework useful in defining and limiting research projects and relating them to other areas of research.

The late 60's and the 70's saw a remarkable growth in institutional research. The primary emphasis of this growth was on the collection of reliable data concerning input and process variables. The stimuli were primarily political and external to the institutions themselves. Now these stimuli have changed. The emphasis in the 80's it seems, will be on concerns for "quality" and effectiveness. To meet these concerns, the role of institutional research must change also. Instead of providing more data with better comparability, researchers must seek to improve the validity of the data, to provide clear and comprehensible interpretations of the data, and to provide better ways of measuring educational outputs and outcomes. The continuing development of a Taxonomy of Educational Benefits is a vital part of this process.

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APPENDIX A

TAXONOMY OF EDUCATIONAL BENEFITS

Lester R. Ruth, Jr.

Summary

Private Beneficiaries

Students/Graduates

Personal Benefits
- General
- Physical Health
- Psychological and Emotional Health
- Personal Growth
- Financial Benefits

Academic Benefits
- Recognition and Credentials
- Knowledge, Skills Attitudes, Values
- Education Options
- Personal Benefits

Career Benefits
- Goal Setting
- Knowledge, Skills Attitudes, Values
- Satisfactory Employment
- Credentials
- Financial Benefits

Cultural Benefits
- Avocational
- Aesthetic

Social Benefits
- Status
- Campus Activities
- Social Skills

Community-Related Benefits
- Citizenship and Politics
- Development
- Service

Employees of Educational Delivery Systems

- Financial Benefits
- Career Benefits
- Academic and Cultural Benefits
- Social Benefits
- Community-Related Benefits

Families of Students, Graduates, and Employees

- General Benefits
- Academic Benefits
- Financial Benefits

Clubs, Associations, etc.

Commercial Enterprises

- Financial
- Personnel
- Development

TAXONOMY OF EDUCATIONAL BENEFITS

Summary

Public Beneficiaries

- General Public
  - Citizenship
  - Development
- Local Community
  - Social
  - Developmental
  - Economic
  - Service
- Public Agencies
  - Personnel
- Governments, General
  - Taxpayer Benefits
  - Cost Avoidance Benefits
- Governments, Local
- Governments, State
  - Florida
    - Basic Skills
    - General Education
    - Vocational Competencies
    - Professional Competencies
    - Advanced Skills and Knowledge
    - Research and Development
    - Leisure and Recreation Skills
- Federal Government
  - Vocational
  - Social

TAXONOMY OF EDUCATIONAL BENEFITS

Summary Page 3

Educational Delivery Systems

- Institutions
  - General Academic Instruction
  - Occupational/Vocational Instruction
  - Developmental Instruction
  - Community Instruction
  - Instruction, General
  - Organized Research
  - Community Service
  - Academic Support
    - Learning Resources
    - Museums and Galleries
    - Other Support
  - Student Services
  - Institutional Support
  - Independent Operations
- Groups or Systems of Institutions

Beneficiary Categories / Benefit Categories	Examples of Benefits	Long Range = L / Short Range = S	Direct = D / Indirect = I	Examples of Measures
PRIVATE BENEFICIARIES				
Students/Graduates				
Personal Benefits				
General	Values	LS	D	Student/graduate perceptions
	Leadership Skills	LS	D	Number of students/graduates holding office
	Persistence			
	Ability to plan and execute, to organize one's time, to follow directions			
	Self-Discipline			
Physical Health	Few Illnesses	LS	D	Number of students/graduates reporting illnesses
Psychological and emotional health	Personal adjustment to changed circumstances	S	D	Number of students/graduates reporting emotional or psychological problems
	Reduction of frustration	LS	D	
Personal growth	Strengths	LS	D	Student/graduate perceptions
	Self-worth	LS	D	
	Self-confidence	LS	D	
	Self-understanding	LS	DI	
Financial Benefits	Non-market (from "doing it yourself")	LS	DI	
	Consumer	LS	D	
	Financial management	LS	I	

Beneficiary Categories / Benefit Categories	Examples of Benefits	Long Range = L, Short Range = S	Direct = D, Indirect = I	Examples of Measures
PRIVATE (Continued)				
Students/Graduates (Cont)				
Academic Benefits				
Recognition, Credentials	Degrees, Certificates, Honors, GPA's, Licenses	S	DI	Number awarded
				GPA
Knowledge, Skills Attitudes, Values	Cognitive competencies	SL	DI	Test scores
	Affective competencies	SL	DI	Student/Graduate perceptions
	Psychomotor competencies	SL	DI	Test scores, performances
	Combination competencies	SL	DI	
Education Options	Option of additional education	L	D	Graduates/leavers who continue their education
Personal benefits	Satisfaction of curiosity	S	D	
Career Benefits				
Goal setting	Choice of realistic career goals	L	D	Number of students identifying career goals
Knowledge, Skills, Attitudes, Values, etc.	Cognitive competencies	SL	DI	Test scores
	Affective competencies	SL	DI	Student/graduate perceptions
	Psychomotor competencies	SL	DI	Test scores
	Combination competencies	SL	DI	
Satisfactory Employment	Entry-level employment	S	D	Number of graduates/leavers employed
	Satisfactory performance on job	L	D	Job retention

Beneficiary Categories Benefit Categories	Examples of Benefits	Long Range = L Short Range = S	Direct = D Indirect = I	Examples of Measures
PRIVATE (Continued)				
Students/Grads. (Cont'd)				
Career (Continued)				
Satisfactory Employment (Ctd.)	Job Satisfaction	L	D	Graduate/Leaver perceptions
	Promotions	SL	D	Number of graduates/leavers promoted
	Career change	S	D	
Credentials	Degrees, certificates, licenses, etc.	S	D	Number awarded
Financial Benefits	Income earned	L	D	Starting salary Present salary
Cultural Benefits				
Avocational	Interests and related competencies	S	D	
Aesthetic	Appreciation, enjoyment	SL	D	Perceptions of persons involved
	Production, performance	SL	D	
Social Benefits				
Status	Fulfillment of social aspirations	SL	D	
Campus activities	Interaction with a a variety of people	S	D	
	Participation in athletics/recreation, organizations			
Social Skills	Group-related competencies			

Beneficiary Categories / Benefit Categories	Examples of Benefits	Long Range = L; Short Range = S	Direct = D; Indirect = I	Examples of Measures
PRIVATE (Continued)				
Students/Graduates (cnt)				
Community				
Citizenship and Politics	Knowledge of rights, priveleges, responsibilities	LS	D	Number of students/graduates who vote
	Attitudes, values, beliefs	LS	D	Student/graduate perceptions
Development	Knowledge of the "system"	LS	D	
	Skills for community involvement and problem solving	LS	D	Number of students/graduates holding public office
Service	Preparation for volunteer service	L	D	Hours devoted to such service by graduates
Employees of Educational delivery systems				
Financial	Income	LS	D	Salary
Career	Job satisfaction	LS	D	Employee perceptions
Academic and cultural	Opportunities	LS	I	Employee participation in academic and cultural activities
Social	Status	LS	I	Employee perceptions
Community	Service opportunities	LS	I	Employee involvement in community activities

Beneficiary Categories / Benefit Categories	Examples of Benefits	Long Range = L / Short Range = S	Direct = D / Indirect = I	Examples of Measures
PRIVATE (Continued)				
Families (Graduates, Employees)				
General	Improvement of organizational structure	LS	I	
Academic	Informal education received at home by children	L	I	
Financial	Income	LS	D	Family income
	Consumer competencies	LS	D	
	Financial management	LS	D	
Clubs, Associations, etc.				
Commercial Enterprises				
Financial	Purchasing power of students graduates employees	S	D	Student expenditures Increased income Payroll of delivery systems
Personnel	Manpower supply	LS	D	Workers trained or educated
	Increased productivity	LS	D	
Development	Improved competitive-for government contracts	LS	I	Contracts awarded
	Application of new knowledge	LS	I	Knowledge, discoveries, inven- actually used

Beneficiary Categories / Benefit Categories	Examples of Benefits	Long Range = L Short Range = S	Direct = D Indirect = I	Examples of Measures
PUBLIC BENEFITS				
General Public				
Citizenship	Better citizens	L	D	Voter turnout Reduced crime rate
Development	New knowledge	L	I	Publications, copyrights, patents
	New art forms	S	D	Exhibitions, performances, publications
Local Community				
Social	Absorption of under-developed learners	S	I	
	Reduction of human waste	LS	D	
Developmental	Attraction of new industry	L	DI	Number of new industries locating in community
	Population stabilization and growth	L	D	Population statistics
Economic	Purchasing power of educational delivery systems, students, employees	LS	D	Total expenditures
	Reduction of unemployment	S	D	Employment data
Service	Extension, personal, and other services	S	D	Community use of services
	Cultural and recreational	S	D	
	Educational	SL	D	
	Use of facilities	S	D	

Beneficiary Categories / Benefit Categories	Examples of Benefits	Long Range = L / Short Range = S	Direct = D / Indirect = I	Examples of Measures
PUBLIC (Continued)				
Agencies				
Personnel	Increased productivity	LS	D	
Governments, General				
Taxpayer	Taxes paid by graduates and employees	LS	D	Amount of taxes
Cost avoidance	Fewer welfare recipients	SL	D	Number of graduates on welfare
	Lower law enforcement costs	SL	D	Number of graduates arrested
Governments, State				
Florida				
Basic Skills General Education Vocational Competencies Professional Competencies Advanced Skills and Knowledge Research and Development Recreation and Leisure Skills	Meet the needs of individuals, of Florida, of society related to these various kinds of competencies	L	D	
Government, Federal				
Vocational	Employment of completers, leavers	S	D	Employment status of completers and leavers of occupational programs

Beneficiary Categories / Benefit Categories	Examples of Benefits	Long Range = L Short Range = S	Direct = D Indirect = I	Examples of Measures
PUBLIC (Continued)				
Federal Government (Continued)				
Vocational (Cont'd)	Income to completers and leavers	LS	D	Salary of completers, leavers
	Quality of training	LS	D	Employer perceptions
	Continued education of completers/leavers	S	D	Educational status of completers/leavers
Social	Acess to education by minorities, women, handicapped, elderly	LS	I	Number enroiled
Others				

Beneficiary Categories / Benefit Categories	Examples of Benefits	Long Range = L / Short Range = S	Direct = D / Indirect = I	Examples of Measures
EDUCATIONAL DELIVERY SYSTEMS				
Institutions				
General Academic Instruction	Completions	S	D	Degrees, certificates awarded Course completions
	Continued Education	L	D	Former students who continue their education
	Employment	L	I	Employment status of former students
	Financial security	L	I	Salaries earned by former students
Occupational/Vocational Instruction	Completions	S	D	Degrees, certificates awarded Course completions
	Continued Education	L	I	Former students continuing their education
	Employment	L	D	Employment status of former students; Job performance; Relation of job to instruction
	Financial Security	L	I	Average salary of former students
Developmental Instruction	Continued Education	S	D	Educational status of former students, GPA's, course and program completions
Community Instruction	Solutions to community problems	S	D	Number of problems solved
	Avocational benefits	S	D	Number of people benefitting
Instruction, General	Acquisition of knowledge skills, attitudes, values, etc. by students	LS	D	Enrollments, Test Scores

Beneficiary Categories / Benefit Categories	Examples of Benefits	Long Range = L Short Range = S	Direct = D Indirect = I	Examples of Measures
EDUCATIONAL DELIVERY SYSTEMS (Continued)				
Institutions (Cont'd)				
Organized Research	Publications	LS	D	Number of publications
	Inventions	LS	D	Number of inventions
	Scientific Discoveries	LS	D	Number of discoveries
	Artistic, musical, dramatic, literary productions	LS	D	Number of Productions
Community Service	Services to people	LS	D	Number of people served
	Services to organizations	LS	D	Number served
Academic Support				
Learning Resources	Access to print and non-print materials	LS	DI	Numbers served: students, staff, community members
Museums and Galleries	Access to cultural and scientific exhibits, etc.	LS	DI	Numbers served: students, staff community members
Other support	Computer assisted instruction	S	D	Students served
	New, improved courses and curricula	SL	D	Number of improvements Enrollments
	Administration of instructional programs	SL	D	Number of programs
Student Services	Social/cultural development	SL	D	Number of activities Number of students served
	Counseling, guidance	SL	DI	Number of students served
	Financial aid	S	I	Amount of aid, number served
	Food service	S	I	Number served

Beneficiary Categories / Benefit Categories	Examples of Benefits	Long Range = L, Short Range = S	Direct = D, Indirect = I	Examples of Measures
EDUCATIONAL DELIVERY SYSTEMS (Continued)				
Institutions (Continued)				
Student Services (Continued)	Placement in jobs	S	DI	Employment status of graduates
	Student workers	S	I	Number of assistants
Institutional Support	Appropriately allocated resources	SL	I	Sufficient resources for each unit of the institution
	Long and short-range plans	SL	I	Extent to which the insti- fulfills its mission
	Management information	SL	I	Amount of information, use of information
	Physical facilities	SL	I	Adequacy of facilities
	External funding	S	I	Amount of funds, Number of grants
	Community support	L	I	Community perceptions of the institution
Independent Operations	Revenue	S	I	Amount of income
Groups or Systems of Institutions				

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APPENDIX B

TAXONOMY OF EDUCATIONAL BENEFITS
ALTERNATE STRUCTURE
PAGE 1

The basic form of the alternate structure is that of a matrix, the rows of which classify benefits by educational delivery systems and the columns of which by private and public beneficiaries. The major purposes of this alternative are to make the categories more mutually exclusive by decreasing overlapping and to point up those benefits that affect multiple beneficiaries.

TAXONOMY OF EDUCATIONAL BENEFITS: ALTERNATE STRUCTURE

	Educational Delivery Systems Only	Private	Public	Both Private And Public
Educational Delivery Systems				
Private or Public Only				

Figure 1 Classification of Benefits by Type of Beneficiary

Major categories of benefits (by kind of beneficiary) are shown in Table 1. Pages 2 and 3 of the Alternate Structure contain a more detailed breakdown of the major categories. Pages 4 and 5 provide more detail about the private and public beneficiary categories, which are unchanged from the original structure. Yet to be developed is a detailed breakdown of both public and private beneficiaries. Benefits are also classified as long-range or short-range and as direct or indirect, as in the original structure.

TAXONOMY OF EDUCATIONAL BENEFITS
ALTERNATE STRUCTURE
PAGE 2

Benefits to Educational Institutions, Components of Institutions, or Groups or Systems of Institutions

The Total System or Group of Institutions

- The System or Group Only
- The System or Group and Its Members
- Private Beneficiaries
- Public Beneficiaries
- Both Private and Public Beneficiaries

The Total Institution

- The Institution Only
  (Including Benefits to Several Major Program Areas)
- Private Beneficiaries
- Public Beneficiaries
- Both Private and Public Beneficiaries

Instructional Programs

- Instructional Program(s) Only
- Private Beneficiaries
- Public Beneficiaries
- Both Private and Public Beneficiaries

Organized Research

- Research Programs or Projects Only
- Private Beneficiaries
- Public Beneficiaries
- Both Private and Public Beneficiaries

Community Service

- Community Service Programs Only
- Private Beneficiaries
- Public Beneficiaries
- Both Private and Public Beneficiaries

TAXONOMY OF EDUCATIONAL BENEFITS
ALTERNATE STRUCTURE
PAGE 3

Benefits to Educational Institutions, Components of Institutions, or Groups or Systems of Institutions (Continued)

Academic Support Programs

Academic Support Programs Only
Private Beneficiaries
Public Beneficiaries
Both Private and Public Beneficiaries

Student Services

Student Service Programs Only
Private Beneficiaries
Public Beneficiaries
Both Private and Public Beneficiaries

Institutional Support

Institutional Support Programs Only
Private Beneficiaries
Public Beneficiaries
Both Private and Public Beneficiaries

Independent Operations

Independent Operations Programs Only
Private Beneficiaries
Public Beneficiaries
Both Private and Public Beneficiaries

Benefits to Private or Public Beneficiaries but not to Educational Delivery Systems

Private Beneficiaries Only

Public Beneficiaries Only

Both Private and Public Beneficiaries

TAXONOMY OF EDUCATIONAL BENEFITS
ALTERNATE STRUCTURE
PAGE 4

Private Beneficiaries

Students/Graduates

Personal Benefits
- General
- Physical Health
- Psychological and Emotional Health
- Personal Growth
- Financial Benefits

Academic Benefits
- Recognition and Credentials
- Knowledge, Skills Attitudes, Values
- Education Options
- Personal Benefits

Career Benefits
- Goal Setting
- Knowledge, Skills Attitudes, Values
- Satisfactory Employment
- Credentials
- Financial Benefits

Cultural Benefits
- Avocational
- Aesthetic

Social Benefits
- Status
- Campus Activities
- Social Skills

Community-Related Benefits
- Citizenship and Politics
- Development
- Service

Employees of Educational Delivery Systems
- Financial Benefits
- Career Benefits
- Academic and Cultural Benefits
- Social Benefits
- Community-Related Benefits

Families of Students, Graduates, and Employees
- General Benefits
- Academic Benefits
- Financial Benefits

Clubs, Associations, etc.

Commercial Enterprises
- Financial
- Personnel
- Development

TAXONOMY OF EDUCATIONAL BENEFITS
ALTERNATE STRUCTURE
PAGE 5

Public Beneficiaries

General Public

Citizenship

Development

Local Community

Social

Developmental

Economic

Service

Public Agencies

Personnel

Governments, General

Taxpayer Benefits

Cost Avoidance Benefits

Governments, Local

Governments, State
Florida

Basic Skills
General Education
Vocational Competencies
Professional Competencies
Advanced Skills and
Knowledge
Research and Development
Leisure and Recreation
Skills

Federal Government

Vocational

Social

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